With

THE NIGHT MAIL

RUDYARD KIPLING

Frank X. Leyendecker

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WITH THE NIGHT MAIL

A STORY OF 2000 A.D.

(TOGETHER WITH EXTRACTS FROM THE CONTEMPORARY MAGAZINE IN WHICH IT APPEARED)

BOOKS BY RUDYARD KIPLING

BRUSHWOOD BOY, THE

CAPTAINS COURAGEOUS

COLLECTED VERSE

DAY'S WORK, THE

DEPARTMENTAL DITTIES AND BALLADS AND BARRACK-ROOM BALLADS

FIVE NATIONS, THE

JUNGLE BOOK, THE

JUNGLE BOOK, SECOND

JUST SO SONG BOOK

JUST SO STORIES

KIM

KIPLING BIRTHDAY BOOK, THE

LIFE'S HANDICAP; Being Stories of Mine Own People

LIGHT THAT FAILED, THE

MANY INVENTIONS

NAULAHKA, THE (With Wolcott Balestier)

PLAIN TALES FROM THE HILLS

PUCK OF POOK'S HILL

SEA TO SEA, FROM

SEVEN SEAS, THE

SOLDIER STORIES

SOLDIERS THREE, THE STORY OF THE GADSBYS, and IN BLACK AND WHITE

STALKY & CO.

THEY

TRAFFICS AND DISCOVERIES

UNDER THE DEODARS, THE PHANTOM 'RICKSHAW and WEE WILLIE WINKIE

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"A MAN WITH A GHASTLY SCARLET HEAD FOLLOWS, SHOUTING THAT HE MUST GO BACK AND BUILD UP HIS RAY."

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BY

RUDYARD KIPLING

Illustrated in Color

BY FRANK X. LEYENDECKER
AND H. REUTERDAHL

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WITH THE NIGHT MAIL

A STORY OF 2000 A.D.

With the Night Mail

AT NINE o'clock of a gusty winter night I stood on the lower stages of one of the G. P. O. outward mail towers. My purpose was a run to Quebec in "Postal Packet 162 or such other as may be appointed": and the Postmaster-General himself countersigned the order. This talisman opened all doors, even those in the despatching-caisson at the foot of the tower, where they were delivering the sorted Continental mail. The bags lay packed close as herrings in the long gray underbodies which our G. P. O. still calls "coaches." Five such coaches were filled as I watched, and were shot up the guides to be locked on to their waiting

packets three hundred feet nearer the stars.

From the despatching-caisson I was conducted by a courteous and wonderfully learned official — Mr. L. L. Geary, Second Despatcher of the Western Route — to the Captains' Room (this wakes an echo of old romance), where the mail captains come on for their turn of duty. He introduces me to the Captain of "162" — Captain Purnall, and his relief, Captain Hodgson. The one is small and dark; the other large and red; but each has the brooding sheathed glance characteristic of eagles and aëronauts. You can see it in the pictures of our racing professionals, from L. V. Rautsch to little Ada Warrleigh — that fathomless abstraction of eyes habitually turned through naked space.

On the notice-board in the Captains' Room, the pulsing arrows of some twenty

indicators register, degree by geographical degree, the progress of as many homeward-bound packets. The word "Cape" rises across the face of a dial; a gong strikes: the South African mid-weekly mail is in at the Highgate Receiving Towers. That is all. It reminds one comically of the traitorous little bell which in pigeon-fanciers' lofts notifies the return of a homer.

"Time for us to be on the move," says Captain Purnall, and we are shot up by the passenger-lift to the top of the despatch-towers. "Our coach will lock on when it is filled and the clerks are aboard." . . .

"No. 162" waits for us in Slip E of the topmost stage. The great curve of her back shines frostily under the lights, and some minute alteration of trim makes her rock a little in her holding-down slips.

Captain Purnall frowns and dives inside. Hissing softly, "162" comes to rest as level

as a rule. From her North Atlantic Winter nose-cap (worn bright as diamond with boring through uncounted leagues of hail, snow, and ice) to the inset of her three built-out propeller-shafts is some two hundred and forty feet. Her extreme diameter, carried well forward, is thirty-seven. Contrast this with the nine hundred by ninety-five of any crack liner and you will realize the power that must drive a hull through all weathers at more than the emergency-speed of the "Cyclonic"!

The eye detects no joint in her skin plating save the sweeping hair-crack of the bow-rudder — Magniac's rudder that assured us the dominion of the unstable air and left its inventor penniless and half-blind. It is calculated to Castelli's "gull-wing" curve. Raise a few feet of that all but invisible plate three-eighths of an inch and she will yaw five miles to port or star-

board ere she is under control again. Give her full helm and she returns on her track like a whip-lash. Cant the whole forward — a touch on the wheel will suffice — and she sweeps at your good direction up or down. Open the complete circle and she presents to the air a mushroom-head that will bring her up all standing within a half mile.

"Yes," says Captain Hodgson, answering my thought, "Castelli thought he 'd discovered the secret of controlling aëroplanes when he 'd only found out how to steer dirigible balloons. Magniac invented his rudder to help war-boats ram each other; and war went out of fashion and Magniac he went out of his mind because he said he could n't serve his country any more. I wonder if any of us ever know what we 're really doing."

"If you want to see the coach locked

you 'd better go aboard. It 's due now," says Mr. Geary. I enter through the door amidships. There is nothing here for display. The inner skin of the gas-tanks comes down to within a foot or two of my head and turns over just short of the turn of the bilges. Liners and yachts disguise their tanks with decoration, but the G. P. O. serves them raw under a lick of gray official paint. The inner skin shuts off fifty feet of the bow and as much of the stern, but the bow-bulkhead is recessed for the lift-shunting apparatus as the stern is pierced for the shaft-tunnels. The engine-room lies almost amidships. Forward of it, extending to the turn of the bow tanks, is an aperture — a bottomless hatch at present — into which our coach will be locked. One looks down over the coamings three hundred feet to the despatching-caisson whence voices boom upward. The light

below is obscured to a sound of thunder, as our coach rises on its guides. It enlarges rapidly from a postage-stamp to a playing-card; to a punt and last a pontoon. The two clerks, its crew, do not even look up as it comes into place. The Quebec letters fly under their fingers and leap into the docketed racks, while both captains and Mr. Geary satisfy themselves that the coach is locked home. A clerk passes the way-bill over the hatch-coaming. Captain Purnall thumb-marks and passes it to Mr. Geary. Receipt has been given and taken. "Pleasant run," says Mr. Geary, and disappears through the door which a foot-high pneumatic compressor locks after him.

"A-ah!" sighs the compressor released. Our holding-down clips part with a tang. We are clear.

Captain Hodgson opens the great colloid

underbody-porthole through which I watch million-lighted London slide eastward as the gale gets hold of us. The first of the low winter clouds cuts off the well-known view and darkens Middlesex. On the south edge of it I can see a postal packet's light ploughing through the white fleece. For an instant she gleams like a star ere she drops toward the Highgate Receiving Towers. "The Bombay Mail," says Captain Hodgson, and looks at his watch. "She 's forty minutes late."

"What 's our level?" I ask.

"Four thousand. Are n't you coming up on the bridge?"

The bridge (let us ever bless the G. P. O. as a repository of ancientest tradition!) is represented by a view of Captain Hodgson's legs where he stands on the control platform that runs thwartships overhead. The bow colloid is unshuttered

and Captain Purnall, one hand on the wheel, is feeling for a fair slant. The dial shows 4,300 feet.

"It 's steep to-night," he mutters, as tier on tier of cloud drops under. "We generally pick up an easterly draught below three thousand at this time o' the year. I hate slathering through fluff."

"So does Van Cutsem. Look at him huntin' for a slant!" says Captain Hodgson. A fog-light breaks cloud a hundred fathoms below. The Antwerp Night Mail makes her signal and rises between two racing clouds far to port, her flanks blood-red in the glare of Sheerness Double Light. The gale will have us over the North Sea in half an hour, but Captain Purnall lets her go composedly — nosing to every point of the compass as she rises.

"Five thousand — six, six thousand eight hundred" — the dip-dial reads ere we find

the easterly drift, heralded by a flurry of snow at the thousand-fathom level. Captain Purnall rings up the engines and keys down the governor on the switch before him. There is no sense in urging machinery when Æolus himself gives you good knots for nothing. We are away in earnest now — our nose notched home on our chosen star. At this level the lower clouds are laid out all neatly combed by the dry fingers of the East. Below that again is the strong westerly blow through which we rose. Overhead, a film of southerly drifting mist draws a theatrical gauze across the firmament. The moonlight turns the lower strata to silver without a stain except where our shadow underruns us. Bristol and Cardiff Double Lights (those statelily inclined beams over Severnmouth) are dead ahead of us; for we keep the Southern Winter Route. Coventry Central, the pivot of the

English system, stabs upward once in ten seconds its spear of diamond light to the north; and a point or two off our starboard bow The Leek, the great cloud-breaker of Saint David's Head, swings its unmistakable green beam twenty-five degrees each way. There must be half a mile of fluff over it in this weather, but it does not affect The Leek.

"Our planet's overlighted if anything," says Captain Purnall at the wheel, as Cardiff-Bristol slides under. "I remember the old days of common white verticals that 'ud show two or three thousand feet up in a mist, if you knew where to look for 'em. In really fluffy weather they might as well have been under your hat. One could get lost coming home then, an' have some fun. Now, it's like driving down Piccadilly."

He points to the pillars of light where the

cloud-breakers bore through the cloud-floor. We see nothing of England's outlines: only a white pavement pierced in all directions by these manholes of variously coloured fire — Holy Island's white and red — St. Bee's interrupted white, and so on as far as the eye can reach. Blessed be Sargent, Ahrens, and the Dubois brothers, who invented the cloud-breakers of the world whereby we travel in security!

"Are you going to lift for The Shamrock?" asks Captain Hodgson. Cork Light (green, fixed) enlarges as we rush to it. Captain Purnall nods. There is heavy traffic hereabouts—the cloud-bank beneath us is streaked with running fissures of flame where the Atlantic boats are hurrying Londonward just clear of the fluff. Mail-packets are supposed, under the Conference rules, to have the five-thousand-foot lanes to themselves, but the foreigner in a hurry

is apt to take liberties with English air. "No. 162" lifts to a long-drawn wail of the breeze in the fore-flange of the rudder and we make Valencia (white, green, white) at a safe 7,000 feet, dipping our beam to an incoming Washington packet.

There is no cloud on the Atlantic, and faint streaks of cream round Dingle Bay show where the driven seas hammer the coast. A big S. A. T. A. liner (*Société Anonyme des Transports Aëriens*) is diving and lifting half a mile below us in search of some break in the solid west wind. Lower still lies a disabled Dane: she is telling the liner all about it in International. Our General Communication dial has caught her talk and begins to eavesdrop. Captain Hodgson makes a motion to shut it off but checks himself. "Perhaps you 'd like to listen," he says.

"'Argol' of St. Thomas," the Dane

whimpers. "Report owners three starboard shaft collar-bearings fused. Can make Flores as we are, but impossible further. Shall we buy spares at Fayal?"

The liner acknowledges and recommends inverting the bearings. The "Argol" answers that she has already done so without effect, and begins to relieve her mind about cheap German enamels for collar-bearings. The Frenchman assents cordially, cries "*Courage, mon ami,*" and switches off.

Their lights sink under the curve of the ocean.

"That's one of Lundt & Bleamers's boats," says Captain Hodgson. "Serves 'em right for putting German compos in their thrust-blocks. *She* won't be in Fayal to-night! By the way, would n't you like to look round the engine-room?"

I have been waiting eagerly for this invitation and I follow Captain Hodgson from

the control-platform, stooping low to avoid the bulge of the tanks. We know that Fleury's gas can lift anything, as the world-famous trials of '89 showed, but its almost indefinite powers of expansion necessitate vast tank room. Even in this thin air the lift-shunts are busy taking out one-third of its normal lift, and still "162" must be checked by an occasional downdraw of the rudder or our flight would become a climb to the stars. Captain Purnall prefers an overlifted to an underlifted ship; but no two captains trim ship alike. "When *I* take the bridge," says Captain Hodgson, "you 'll see me shunt forty per cent. of the lift out of the gas and run her on the upper rudder. With a swoop upwards instead of a swoop downwards, *as* you say. Either way will do. It 's only habit. Watch our dip-dial! Tim fetches her down once every thirty knots as regularly as breathing."

So is it shown on the dip-dial. For five or six minutes the arrow creeps from 6,700 to 7,300. There is the faint "szgee" of the rudder, and back slides the arrow to 6,500 on a falling slant of ten or fifteen knots.

"In heavy weather you jockey her with the screws as well," says Captain Hodgson, and, unclipping the jointed bar which divides the engine-room from the bare deck, he leads me on to the floor.

Here we find Fleury's Paradox of the Bulkheaded Vacuum — which we accept now without thought — literally in full blast. The three engines are H. T. &. T. assisted-vacuo Fleury turbines running from 3,000 to the Limit — that is to say, up to the point when the blades make the air "bell" —cut out a vacuum for themselves precisely as over-driven marine propellers used to do. "162's" Limit is low on account of the small size of her nine screws, which, though

handier than the old colloid Thelussons, "bell" sooner. The midships engine, generally used as a reinforce, is not running; so the port and starboard turbine vacuum-chambers draw direct into the return-mains.

The turbines whistle reflectively. From the low-arched expansion-tanks on either side the valves descend pillarwise to the turbine-chests, and thence the obedient gas whirls through the spirals of blades with a force that would whip the teeth out of a power-saw. Behind, is its own pressure held in leash or spurred on by the lift-shunts; before it, the vacuum where Fleury's Ray dances in violet-green bands and whirled turbillions of flame. The jointed U-tubes of the vacuum-chamber are pressure-tempered colloid (no glass would endure the strain for an instant) and a junior engineer with tinted spectacles watches the Ray intently. It is the very heart of the

machine — a mystery to this day. Even Fleury who begat it and, unlike Magniac, died a multi-millionaire, could not explain how the restless little imp shuddering in the U-tube can, in the fractional fraction of a second, strike the furious blast of gas into a chill grayish-green liquid that drains (you can hear it trickle) from the far end of the vacuum through the eduction-pipes and the mains back to the bilges. Here it returns to its gaseous, one had almost written sagacious, state and climbs to work afresh. Bilge-tank, upper tank, dorsal-tank, expansion-chamber, vacuum, main-return (as a liquid), and bilge-tank once more is the ordained cycle. Fleury's Ray sees to that; and the engineer with the tinted spectacles sees to Fleury's Ray. If a speck of oil, if even the natural grease of the human finger touch the hooded terminals Fleury's Ray will wink and disappear and

must be laboriously built up again. This means half a day's work for all hands and an expense of one hundred and seventy-odd pounds to the G. P. O. for radium-salts and such trifles.

"Now look at our thrust-collars. You won't find much German compo there. Full-jewelled, you see," says Captain Hodgson as the engineer shunts open the top of a cap. Our shaft-bearings are C. M. C. (Commercial Minerals Company) stones, ground with as much care as the lens of a telescope. They cost £37 apiece. So far we have not arrived at their term of life. These bearings came from "No. 97," which took them over from the old "Dominion of Light," which had them out of the wreck of the "Perseus" aëroplane in the years when men still flew linen kites over thorium engines!

They are a shining reproof to all low-grade German "ruby" enamels, so-called "boort"

facings, and the dangerous and unsatisfactory alumina compounds which please dividend-hunting owners and turn skippers crazy.

The rudder-gear and the gas lift-shunt, seated side by side under the engine-room dials, are the only machines in visible motion. The former sighs from time to time as the oil plunger rises and falls half an inch. The latter, cased and guarded like the U-tube aft, exhibits another Fleury Ray, but inverted and more green than violet. Its function is to shunt the lift out of the gas, and this it will do without watching. That is all! A tiny pump-rod wheezing and whining to itself beside a sputtering green lamp. A hundred and fifty feet aft down the flat-topped tunnel of the tanks a violet light, restless and irresolute. Between the two, three white-painted turbine-trunks, like eel-baskets laid on their side, accentuate

the empty perspectives. You can hear the trickle of the liquefied gas flowing from the vacuum into the bilge-tanks and the soft *gluck-glock* of gas-locks closing as Captain Purnall brings "162" down by the head. The hum of the turbines and the boom of the air on our skin is no more than a cotton-wool wrapping to the universal stillness. And we are running an eighteen-second mile.

I peer from the fore end of the engine-room over the hatch-coamings into the coach. The mail-clerks are sorting the Winnipeg, Calgary, and Medicine Hat bags: but there is a pack of cards ready on the table.

Suddenly a bell thrills; the engineers run to the turbine-valves and stand by; but the spectacled slave of the Ray in the U-tube never lifts his head. He must watch where he is. We are hard-braked and going astern; there is language from the control-platform.

"Tim's sparking badly about something," says the unruffled Captain Hodgson. "Let's look."

Captain Purnall is not the suave man we left half an hour since, but the embodied authority of the G. P. O. Ahead of us floats an ancient, aluminum-patched, twin-screw tramp of the dingiest, with no more right to the 5,000 foot lane than has a horse-cart to a modern town. She carries an obsolete "barbette" conning-tower—a six-foot affair with railed platform forward—and our warning beam plays on the top of it as a policeman's lantern flashes on the area sneak. Like a sneak-thief, too, emerges a shock-headed navigator in his shirt-sleeves. Captain Purnall wrenches open the colloid to talk with him man to man. There are times when Science does not satisfy.

"What under the stars are you doing here, you sky-scraping chimney-sweep?"

he shouts as we two drift side by side. "Do you know this is a Mail-lane? You call yourself a sailor, sir? You ain't fit to peddle toy balloons to an Esquimaux. Your name and number! Report and get down, and be——!"

"I 've been blown up once," the shock-headed man cries, hoarsely, as a dog barking. "I don't care two flips of a contact for anything *you* can do, Postey."

"Don't you, sir? But I 'll make you care. I 'll have you towed stern first to Disko and broke up. You can't recover insurance if you 're broke for obstruction. Do you understand *that?*"

Then the stranger bellows: "Look at my propellers! There 's been a wulli-wa down under that has knocked us into umbrella-frames! We 've been blown up about forty thousand feet! We 're all one conjuror's watch inside! My mate's arm 's broke; my

engineer's head 's cut open; my Ray went out when the engines smashed; and . . . and . . . for pity's sake give me my height, Captain! We doubt we're dropping."

"Six thousand eight hundred. Can you hold it?" Captain Purnall overlooks all insults, and leans half out of the colloid, staring and snuffing. The stranger leaks pungently.

"We ought to blow into St. John's with luck. We 're trying to plug the foretank now, but she 's simply whistling it away," her captain wails.

"She 's sinking like a log," says Captain Purnall in an undertone. "Call up the Banks Mark Boat, George." Our dip-dial shows that we, keeping abreast the tramp, have dropped five hundred feet the last few minutes.

Captain Purnall presses a switch and our

signal beam begins to swing through the night, twizzling spokes of light across infinity.

"That 'll fetch something," he says, while CaptainHodgson watches the General Communicator. He has called up the North Banks Mark Boat, a few hundred miles west, and is reporting the case.

"I'll stand by you," Captain Purnall roars to the lone figure on the conning-tower.

"Is it as bad as that?" comes the answer. "She is n't insured, she 's mine."

"'Might have guessed as much," mutters Hodgson. "Owner's risk is the worst risk of all!"

"Can't I fetch St. John's — not even with this breeze?" the voice quavers.

"Stand by to abandon ship. Have n't you *any* lift in you, fore or aft?"

"Nothing but the midship tanks and they 're none too tight. You see, my Ray

gave out and —" he coughs in the reek of the escaping gas.

"You poor devil!" This does not reach our friend. "What does the Mark Boat say, George?"

"'Wants to know if there 's any danger to traffic. Says she 's in a bit of weather herself and can't quit station. I 've turned in a General Call, so even if they don't see our beam some one 's bound to help--or else we must. Shall I clear our slings. Hold on! Here we are! A Planet liner, too! She 'll be up in a tick!"

"Tell her to have her slings ready," cries his brother captain. "There won't be much time to spare . . . Tie up your mate," he roars to the tramp.

"My mate 's all right. It 's my engineer. He 's gone crazy."

"Shunt the lift out of him with a spanner. Hurry!"

"But I can make St. John's if you 'll stand by."

"You 'll make the deep, wet Atlantic in twenty minutes. You 're less than fifty-eight hundred now. Get your papers."

A Planet liner, east bound, heaves up in a superb spiral and takes the air of us humming. Her underbody colloid is open and her transporter-slings hang down like tentacles. We shut off our beam as she adjusts herself — steering to a hair — over the tramp's conning-tower. The mate comes up, his arm strapped to his side, and stumbles into the cradle. A man with a ghastly scarlet head follows, shouting that he must go back and build up his Ray. The mate assures him that he will find a nice new Ray all ready in the liner's engine-room. The bandaged head goes up wagging excitedly. A youth and a woman follow. The liner cheers hollowly above us, and

we see the passenger's faces at the saloon colloid.

"That 's a good girl. What 's the fool waiting for now?" says Captain Purnall.

The skipper comes up, still appealing to us to stand by and see him fetch St. John's. He dives below and returns — at which we little human beings in the void cheer louder than ever — with the ship's kitten. Up fly the liner's hissing slings; her underbody crashes home and she hurtles away again. The dial shows less than 3,000 feet.

The Mark Boat signals we must attend to the derelict, now whistling her death song, as she falls beneath us in long sick zigzags.

"Keep our beam on her and send out a General Warning," says Captain Purnall, following her down.

There is no need. Not a liner in air but knows the meaning of that vertical

"SLIDES LIKE A LOST SOUL DOWN THAT PITLESS LADDER OF LIGHT, AND THE ATLANTIC TAKES HER"

beam and gives us and our quarry a wide berth.

"But she 'll drown in the water, won't she?" I ask.

"Not always," is his answer. "I 've known a derelict up-end and sift her engines out of herself and flicker round the Lower Lanes for three weeks on her forward tanks only. We 'll run no risks. Pith her, George, and look sharp. There 's weather ahead."

Captain Hodgson opens the underbody colloid, swings the heavy pithing-iron out of its rack which in liners is generally cased as a settee, and at two hundred feet releases the catch. We hear the whir of the crescent-shaped arms opening as they descend. The derelict's forehead is punched in, starred across, and rent diagonally. She falls stern first, our beam upon her; slides like a lost soul down

that pitiless ladder of light, and the Atlantic takes her.

"A filthy business," says Hodgson. "I wonder what it must have been like in the old days."

The thought had crossed my mind too. What if that wavering carcass had been filled with International-speaking men of all the Internationalities, each one of them taught (*that* is the horror of it!) that after death he would very possibly go forever to unspeakable torment?

And not half a century since, we (one knows now that we are only our fathers reenlarged upon the earth), *we*, I say, ripped and rammed and pithed to admiration.

Here Tim, from the control-platform, shouts that we are to get into our inflators and to bring him his at once.

We hurry into the heavy rubber suits — and the engineers are already dressed — and

inflate at the air-pump taps. G. P. O. inflators are thrice as thick as a racing man's "flickers," and chafe abominably under the armpits. George takes the wheel until Tim has blown himself up to the extreme of rotundity. If you kicked him off the c. p. to the deck he would bounce back. But it is "162" that will do the kicking.

"The Mark Boat 's mad — stark ravin' crazy," he snorts, returning to command. "She says there 's a bad blow-out ahead and wants me to pull over to Greenland. I 'll see her pithed first! We wasted an hour and a quarter over that dead duck down under, and now I 'm expected to go rubbin' my back all round the Pole. What does she think a postal packet 's made of? Gummed silk? Tell her we're coming on straight, George."

George buckles him into the Frame and switches on the Direct Control. Now under Tim's left toe lies the port-engine Ac-

celerator; under his left heel the Reverse, and so with the other foot. The lift-shunt stops stand out on the rim of the steering-wheel where the fingers of his left hand can play on them. At his right hand is the mid-ships engine lever ready to be thrown into gear at a moment's notice. He leans for-ward in his belt, eyes glued to the colloid, and one ear cocked toward the General Communicator. Henceforth he is the strength and direction of "162," through whatever may befall.

The Banks Mark Boat is reeling out pages of A. B. C. Directions to the traffic at large. We are to secure all "loose objects"; hood up our Fleury Rays; and "on no ac-count to attempt to clear snow from our conning-towers till the weather abates." Under-powered craft, we are told, can ascend to the limit of their lift, mail-packets to look out for them accordingly; the lower

lanes westward are pitting very badly, "with frequent blow-outs, vortices, laterals, etc."

Still the clear dark holds up unblemished. The only warning is the electric skin-tension (I feel as though I were a lace-maker's pillow) and an irritability which the gibbering of the General Communicator increases almost to hysteria.

We have made eight thousand feet since we pithed the tramp and our turbines are giving us an honest two hundred and ten knots.

Very far to the west an elongated blur of red, low down, shows us the North Banks Mark Boat. There are specks of fire round her rising and falling—bewildered planets about an unstable sun — helpless shipping hanging on to her light for company's sake. No wonder she could not quit station.

She warns us to look out for the back-

wash of the bad vortex in which (her beam shows it) she is even now reeling.

The pits of gloom about us begin to fill with very faintly luminous films — wreathing and uneasy shapes. One forms itself into a globe of pale flame that waits shivering with eagerness till we sweep by. It leaps monstrously across the blackness, alights on the precise tip of our nose, pirouettes there an instant, and swings off. Our roaring bow sinks as though that light were lead — sinks and recovers to lurch and stumble again beneath the next blow-out. Tim's fingers on the lift-shunt strike chords of numbers — 1 : 4 : 7 : — 2 : 4 : 6 : — 7 : 5 : 3, and so on; for he is running by his tanks only, lifting or lowering her against the uneasy air. All three engines are at work, for the sooner we have skated over this thin ice the better. Higher we dare not go. The whole upper vault is charged with pale krypton

vapours, which our skin friction may excite to unholy manifestations. Between the upper and the lower levels — 5,000, and 7,000, hints the Mark Boat — we may perhaps bolt through if . . . Our bow clothes itself in blue flame and falls like a sword. No human skill can keep pace with the changing tensions. A vortex has us by the beak and we dive down a two-thousand-foot slant at an angle (the dip-dial and my bouncing body record it) of thirty-five. Our turbines scream shrilly; the propellers cannot bite on the thin air; Tim shunts the lift out of five tanks at once and by sheer weight drives her bulletwise through the maelstrom till she cushions with a jar on an up-gust, three thousand feet below.

"*Now* we 've done it," says George in my ear. "Our skin-friction that last slide, has played Old Harry with the tensions! Look

out for laterals, Tim, she 'll want some holding."

"I 've got her," is the answer. "Come *up*, old woman."

She comes up nobly, but the laterals buffet her left and right like the pinions of angry angels. She is jolted off her course in four ways at once, and cuffed into place again, only to be swung aside and dropped into a new chaos. We are never without a corposant grinning on our bows or rolling head over heels from nose to midships, and to the crackle of electricity around and within us is added once or twice the rattle of hail — hail that will never fall on any sea. Slow we must or we may break our back, pitch-poling.

"Air 's a perfectly elastic fluid," roars George above the tumult. "About as elastic as a head sea off the Fastnet, aint it?"

He is less than just to the good element.

THE STORM

If one intrudes on the Heavens when they are balancing their volt-accounts; if one disturbs the High Gods' market-rates by hurling steel hulls at ninety knots across tremblingly adjusted electric tensions, one must not complain of any rudeness in the reception. Tim met it with an unmoved countenance, one corner of his under lip caught up on a tooth, his eyes fleeting into the blackness twenty miles ahead, and the fierce sparks flying from his knuckles at every turn of the hand. Now and again he shook his head to clear the sweat trickling from his eyebrows, and it was then that George, watching his chance, would slide down the life-rail and swab his face quickly with a big red handkerchief. I never imagined that a human being could so continuously labour and so collectedly think as did Tim through that Hell's half hour when the flurry was at its worst. We were dragged hither and

yon by warm or frozen suctions, belched up on the tops of wulli-was, spun down by vortices and clubbed aside by laterals under a dizzying rush of stars in the company of a drunken moon. I heard the rushing click of the midship-engine-lever sliding in and out, the low growl of the lift-shunts, and, louder than the yelling winds without, the scream of the bow-rudder gouging into any lull that promised hold for an instant. At last we began to claw up on a cant, bow-rudder and port-propeller together; only the nicest balancing of tanks saved us from spinning like the rifle-bullet of the old days.

"We 've got to hitch to windward of that Mark Boat somehow," George cried.

"There 's no windward," I protested feebly, where I swung shackled to a stanchion. "How can there be?"

He laughed — as we pitched into a thou-

sand foot blow-out — that red man laughed beneath his inflated hood!

"Look!" he said. "We must clear those refugees with a high lift."

The Mark Boat was below and a little to the sou'west of us, fluctuating in the centre of her distraught galaxy. The air was thick with moving lights at every level. I take it most of them were trying to lie head to wind but, not being hydras, they failed. An under-tanked Moghrabi boat had risen to the limit of her lift and, finding no improvement, had dropped a couple of thousand. There she met a superb wulli-wa and was blown up spinning like a dead leaf. Instead of shuting off she went astern and, naturally, rebounded as from a wall almost into the Mark Boat, whose language (our G. C. took it in) was humanly simple.

"If they 'd only ride it out quietly it 'ud be better," said George in a calm, as we

climbed like a bat above them all. "But some skippers *will* navigate without enough lift. What does that Tad-boat think she is doing, Tim?"

"Playin' kiss in the ring," was Tim's unmoved reply. A Trans-Asiatic Direct liner had found a smooth and butted into it full power. But there was a vortex at the tail of that smooth, so the T. A. D. was flipped out like a pea from off a fingernail, braking madly as she fled down and all but overending.

"Now I hope she 's satisfied," said Tim. "I 'm glad I 'm not a Mark Boat . . . Do I want help?" The C. G. dial had caught his ear. "George, you may tell that gentleman with my love — love, remember, George — that I do not want help. Who *is* the officious sardine-tin?"

"A Rimouski drogher on the lookout for a tow."

"Very kind of the Rimouski drogher. This postal packet is n't being towed at present."

"Those droghers will go anywhere on a chance of salvage," George explained. "We call 'em kittiwakes."

A long-beaked, bright steel ninety-footer floated at ease for one instant within hail of us, her slings coiled ready for rescues, and a single hand in her open tower. He was smoking. Surrendered to the insurrection of the airs through which we tore our way, he lay in absolute peace. I saw the smoke of his pipe ascend untroubled ere his boat dropped, it seemed, like a stone in a well.

We had just cleared the Mark Boat and her disorderly neighbours when the storm ended as suddenly as it had begun. A shooting-star to northward filled the sky with the green blink of a meteorite dissipating itself in our atmosphere.

Said George: "That may iron out all the tensions." Even as he spoke, the conflicting winds came to rest; the levels filled; the laterals died out in long easy swells; the airways were smoothed before us. In less than three minutes the covey round the Mark Boat had shipped their power-lights and whirred away upon their businesses.

"What 's happened?" I gasped. The nerve-storm within and the volt-tingle without had passed: my inflators weighed like lead.

"God, He knows!" said Captain George, soberly. "That old shooting-star's skin-friction has discharged the different levels. I 've seen it happen before. Phew! What a relief!"

We dropped from ten to six thousand and got rid of our clammy suits. Tim shut off and stepped out of the Frame. The Mark Boat was coming up behind us. He

opened the colloid in that heavenly stillness and mopped his face.

"Hello, Williams!" he cried. "A degree or two out o' station, ain't you?"

"May be," was the answer from the Mark Boat. "I've had some company this evening."

"So I noticed. Was n't that quite a little draught?"

"I warned you. Why did n't you pull out round by Disko? The east-bound packets have."

"Me? Not till I 'm running a Polar consumptives' Sanatorium boat. I was squinting through a colloid before you were out of your cradle, my son."

"I 'd be the last man to deny it," the captain of the Mark Boat replies softly. "The way you handled her just now — I 'm a pretty fair judge of traffic in a volt-flurry — it was a thousand revo-

lutions beyond anything even *I* 've ever seen."

Tim's back supples visibly to this oiling. Captain George on the c. p. winks and points to the portrait of a singularly attractive maiden pinned up on Tim's telescope-bracket above the steering-wheel.

I see. Wholly and entirely do I see!

There is some talk overhead of "coming round to tea on Friday," a brief report of the derelict's fate, and Tim volunteers as he descends: "For an A. B. C. man young Williams is less of a high-tension fool than some . . . Were you thinking of taking her on, George? Then I 'll just have a look round that port-thrust — seems to me it 's a trifle warm — and we 'll jog along."

The Mark Boat hums off joyously and hangs herself up in her appointed eyrie. Here she will stay, a shutterless obser-

vatory; a life-boat station; a salvage tug; a court of ultimate appeal-cum-meteorological bureau for three hundred miles in all directions, till Wednesday next when her relief slides across the stars to take her buffeted place. Her black hull, double conning-tower, and ever-ready slings represent all that remains to the planet of that odd old word authority. She is responsible only to the Aërial Board of Control — the A. B. C. of which Tim speaks so flippantly. But that semi-elected, semi-nominated body of a few score persons of both sexes, controls this planet. "Transportation is Civilization," our motto runs. Theoretically, we do what we please so long as we do not interfere with the traffic *and all it implies.* Practically, the A. B. C. confirms or annuls all international arrangements and, to judge from its last report, finds our tolerant, humorous, lazy little planet only too ready to shift the whole

burden of private administration on its shoulders.

I discuss this with Tim, sipping maté on the c. p. while George fans her along over the white blur of the Banks in beautiful upward curves of fifty miles each. The dip-dial translates them on the tape in flowing freehand.

Tim gathers up a skein of it and surveys the last few feet, which record "162's" path through the volt-flurry.

"I have n't had a fever-chart like this to show up in five years," he says ruefully.

A postal packet's dip-dial records every yard of every run. The tapes then go to the A. B. C., which collates and makes composite photographs of them for the instruction of captains. Tim studies his irrevocable past, shaking his head.

"Hello! Here 's a fifteen-hundred-foot drop at eighty-five degrees! We must

have been standing on our heads then, George."

"You don't say so," George answers. "I fancied I noticed it at the time."

George may not have Captain Purnall's catlike swiftness, but he is all an artist to the tips of the broad fingers that play on the shunt-stops. The delicious flight-curves come away on the tape with never a waver. The Mark Boat's vertical spindle of light lies down to eastward, setting in the face of the following stars. Westward, where no planet should rise, the triple verticals of Trinity Bay (we keep still to the Southern route) make a low-lifting haze. We seem the only thing at rest under all the heavens; floating at ease till the earth's revolution shall turn up our landing-towers.

And minute by minute our silent clock gives us a sixteen-second mile.

"Some fine night," says Tim. "We 'll be even with that clock's Master."

"He 's coming now," says George, over his shoulder. "I 'm chasing the night west."

The stars ahead dim no more than if a film of mist had been drawn under unobserved, but the deep air-boom on our skin changes to a joyful shout.

"The dawn-gust," says Tim. "It 'll go on to meet the Sun. Look! Look! There's the dark being crammed back over our bow! Come to the after-colloid. I 'll show you something.

The engine-room is hot and stuffy; the clerks in the coach are asleep, and the Slave of the Ray is near to follow them. Tim slides open the aft colloid and reveals the curve of the world — the ocean's deepest purple — edged with fuming and intolerable gold. Then the Sun rises and through the

colloid strikes out our lamps. Tim scowls in his face.

"Squirrels in a cage," he mutters. "That 's all we are. Squirrels in a cage! He 's going twice as fast as us. Just you wait a few years, my shining friend and we 'll take steps that will amaze you. *We'll* Joshua you!"

Yes, that is our dream: to turn all earth into the Vale of Ajalon at our pleasure. So far, we can drag out the dawn to twice its normal length in these latitudes. But some day — even on the Equator — we shall hold the Sun level in his full stride.

Now we look down on a sea thronged with heavy traffic. A big submersible breaks water suddenly. Another and another follow with a swash and a suck and a savage bubbling of relieved pressures. The deep-sea freighters are rising to lung up after the long night, and the leisurely

ocean is all patterned with peacock's eyes of foam.

"We 'll lung up, too," says Tim, and when we return to the c. p. George shuts off, the colloids are opened, and the fresh air sweeps her out. There is no hurry. The old contracts (they will be revised at the end of the year) allow twelve hours for a run which any packet can put behind her in ten. So we breakfast in the arms of an easterly slant which pushes us along at a languid twenty.

To enjoy life, and tobacco, begin both on a sunny morning half a mile or so above the dappled Atlantic cloud-belts and after a volt-flurry which has cleared and tempered your nerves. While we discussed the thickening traffic with the superiority that comes of having a high level reserved to ourselves, we heard (and I for the first time) the morning hymn on a Hospital boat.

She was cloaked by a skein of ravelled fluff

beneath us and we caught the chant before she rose into the sunlight. "*Oh, ye Winds of God,*" sang the unseen voices: "*bless ye the Lord! Praise Him and magnify Him forever!*"

We slid off our caps and joined in. When our shadow fell across her great open platforms they looked up and stretched out their hands neighbourly while they sang. We could see the doctors and the nurses and the white-button-like faces of the cot-patients. She passed slowly beneath us, heading northward, her hull, wet with the dews of the night, all ablaze in the sunshine. So took she the shadow of a cloud and vanished, her song continuing. *Oh, ye holy and humble men of heart, bless ye the Lord! Praise Him and magnify Him forever.*

"She 's a public lunger or she would n't have been singing the *Benedicite*; and she 's a Greenlander or she would n't have snow-

blinds over her colloids," said George at last. "She 'll be bound for Frederikshavn or one of the Glacier sanatoriums for a month. If she was an accident ward she 'd be hung up at the eight-thousand-foot level. Yes — consumptives."

"Funny how the new things are the old things. I 've read in books," Tim answered, "that savages used to haul their sick and wounded up to the tops of hills because microbes were fewer there. We hoist 'em into sterilized air for a while. Same idea. How much do the doctors say we 've added to the average life of a man?"

"Thirty years," says George with a twinkle in his eye. "Are we going to spend 'em all up here, Tim?"

"Flap along, then. Flap along. Who 's hindering?" the senior captain laughed, as we went in.

We held a good lift to clear the coastwise

and Continental shipping; and we had need of it. Though our route is in no sense a populated one, there is a steady trickle of traffic this way along. We met Hudson Bay furriers out of the Great Preserve, hurrying to make their departure from Bonavista with sable and black fox for the insatiable markets. We over-crossed Keewatin liners, small and cramped; but their captains, who see no land between Trepassy and Blanco, know what gold they bring back from West Africa. Trans-Asiatic Directs, we met, soberly ringing the world round the Fiftieth Meridian at an honest seventy knots; and white-painted Ackroyd & Hunt fruiters out of the south fled beneath us, their ventilated hulls whistling like Chinese kites. Their market is in the North among the northern sanatoria where you can smell their grapefruit and bananas across the cold snows. Argentine beef

boats we sighted too, of enormous capacity and unlovely outline. They, too, feed the northern health stations in ice-bound ports where submersibles dare not rise.

Yellow-bellied ore-flats and Ungava petrol-tanks punted down leisurely out of the north like strings of unfrightened wild duck. It does not pay to "fly" minerals and oil a mile farther than is necessary; but the risks of transhipping to submersibles in the ice-pack off Nain or Hebron are so great that these heavy freighters fly down to Halifax direct, and scent the air as they go. They are the biggest tramps aloft except the Athabasca grain-tubs. But these last, now that the wheat is moved, are busy, over the world's shoulder, timber-lifting in Siberia.

We held to the St. Lawrence (it is astonishing how the old water-ways still pull us children of the air), and followed his broad

line of black between its drifting ice blocks, all down the Park that the wisdom of our fathers — but every one knows the Quebec run.

We dropped to the Heights Receiving Towers twenty minutes ahead of time and there hung at ease till the Yokohama Intermediate Packet could pull out and give us our proper slip. It was curious to watch the action of the holding-down clips all along the frosty river front as the boats cleared or came to rest. A big Hamburger was leaving Pont Levis and her crew, unshipping the platform railings, began to sing "Elsinore" — the oldest of our chanteys. You know it of course:

Mother Rugen's tea-house on the Baltic —
Forty couple waltzing on the floor!
And you can watch my Ray,
For I must go away
And dance with Ella Sweyn at Elsinore!

Then, while they sweated home the covering-plates:

Nor-Nor-Nor-Nor-
West from Sourabaya to the Baltic—
Ninety knot an hour to the Skaw!
Mother Rugen's tea-house on the Baltic
And a dance with Ella Sweyn at Elsinore!

The clips parted with a gesture of indignant dismissal, as though Quebec, glittering under her snows, were casting out these light and unworthy lovers. Our signal came from the Heights. Tim turned and floated up, but surely then it was with passionate appeal that the great tower arms flung open — or did I think so because on the upper staging a little hooded figure also opened her arms wide towards her father?

* * *

In ten seconds the coach with its clerks clashed down to the receiving-caisson; the hostlers displaced the engineers at the idle

"I'VE ASKED HIM TO TEA ON FRIDAY"

turbines, and Tim, prouder of this than all, introduced me to the maiden of the photograph on the shelf. "And by the way," said he to her, stepping forth in sunshine under the hat of civil life, "I saw young Williams in the Mark Boat. I 've asked him to tea on Friday. "

AERIAL BOARD OF CONTROL BULLETIN

Aerial Board of Control

Lights

No changes in English Inland lights for week ending Dec. 18.

PLANETARY COASTAL LIGHTS. Week ending Dec. 18. Verde inclined guide-light changes from 1st proximo to triple flash — green white green — in place of occulting red as heretofore. The warning light for Harmattan winds will be continuous vertical glare (white) on all oases of trans-Saharan N. E. by E. Main Routes.

INVERCARGIL (N. Z.) — From 1st prox.: extreme southerly light (double red) will exhibit white beam inclined 45 degrees on approach of Southerly Buster. Traffic flies high off this coast between April and October.

TABLE BAY — Devil's Peak Glare removed to Simonsberg. Traffic making Table Mountain coastwise keep all lights from Three Anchor Bay at least five shipping hundred feet under, and do not round to till beyond E. shoulder Devil's Peak.

SANDHEADS LIGHT — Green triple vertical marks new private landing-stage for Bay and Burma traffic only.

SNAEFELL JOKUL — White occulting light withdrawn for winter.

PATAGONIA — No summer light south C. Pilar. This includes Staten Island and Port Stanley.

C. NAVARIN — Quadruple fog flash (white), one minute intervals (new).

East Cape — Fog flash — single white with single bomb. 30 sec. intervals (new).

Malayan Archipelago lights unreliable owing eruptions. Lay from Somerset to Singapore direct, keeping highest levels.

For the Board:

Catterthun
St. Just
Van Hedder
} *Lights.*

Casualties

Week ending Dec. 18th.

Sable Island Landing Towers — Green freighter, number indistinguishable, up-ended, and fore-tank pierced after collision, passed 300-ft. level 2 p.m. Dec. 15th. Watched to water and pithed by Mark Boat.

N. F. Banks — Postal Packet 162 reports *Halma* freighter (Fowey — St. John's) abandoned, leaking after weather, 46° 15' N. 50° 15' W. Crew rescued by Planet liner *Asteroid*. Watched to water and pithed by postal packet, Dec. 14th.

Kerguelen Mark Boat reports last call from *Cymena* freighter (Gayer Tong-Huk & Co.) taking water and sinking in snow-storm South McDonald Islands. No wreckage recovered. Addresses, etc., of crew at all A. B. C. offices.

Fezzan — T. A. D. freighter *Ulema* taken ground during Harmattan on Akakus Range. Under plates strained. Crew at Ghat where repairing Dec. 13th.

Biscay, Mark Boat reports *Carducci* (Valandingham line) slightly spiked in western gorge Point de

Benasque. Passengers transferred *Andorra* (same line). Barcelona Mark Boat salving cargo Dec. 12th.

Ascension, Mark Boat — Wreck of unknown racing-plane, Parden rudder, wire-stiffened xylonite vans, and Harliss engine-seating, sighted and salved 7° 20′ S. 18° 41′ W. Dec. 15th. Photos at all A. B. C. offices.

Missing

No answer to General Call having been received during the last week from following overdues, they are posted as missing.

Atlantis, W. 17630 . . . . . Canton–Valparaiso
Audhumla, W. 809 . . . . . Stockholm–Odessa
Berenice, W. 2206 . . . . . Riga–Vladivostock
Draco, E. 446 . . . . . Coventry–Puntas Arenas
Tontine, E. 3068 . . . . . C. Wrath–Ungava
Wu-Sung, E. 41776 . . . . . Hankow–Lobito Bay

General Call (all Mark Boats) out for:

Jane Eyre, W. 6990 . . . . Port Rupert–City of Mexico
Santander, W. 5514 . . . . Gobi-desert–Manila
V. Edmundsun, E. 9690 . . . Kandahar–Fiume

Broke for Obstruction, and Quitting Levels

Valkyrie (racing plane), A. J. Hartley owner, New York (twice warned).

Geisha (racing plane), S. van Cott owner, Philadelphia (twice warned).

Marvel of Peru (racing plane), J. X. Peixoto owner, Rio de Janeiro (twice warned).

For the Board:

Lazareff
McKeough } *Traffic.*
Goldblatt

NOTES

Notes

High-Level Sleet

The Northern weather so far shows no sign of improvement. From all quarters come complaints of the unusual prevalence of sleet at the higher levels. Racing-planes and digs alike have suffered severely—the former from unequal deposits of half-frozen slush on their vans (and only those who have "held up" a badly balanced plane in a cross wind know what that means), and the latter from loaded bows and snow-cased bodies. As a consequence, the Northern and Northwestern upper levels have been practically abandoned, and the high fliers have returned to the ignoble security of the Three, Five, and Six hundred foot levels. But there remain a few undaunted sun-hunters who, in spite of frozen stays and ice-jammed connecting-rods, still haunt the blue empyrean.

Bat-Boat Racing

The scandals of the past few years have at last moved the yachting world to concerted action in regard to "bat" boat racing.

We have been treated to the spectacle of what are practically keeled racing-planes driven a clear five foot or more above the water, and only eased down to touch their so-called "native element" as they near the line. Judges and starters have been conveniently blind to this absurdity, but the public demonstration off St. Catherine's Light at the Autumn Regattas has borne ample, if tardy,

fruit. In future the "bat" is to be a boat, and the long-unheeded demand of the true sportsman for "no daylight under mid-keel in smooth water" is in a fair way to be conceded. The new rule severely restricts plane area and lift alike. The gas compartments are permitted both fore and aft, as in the old type, but the water-ballast central tank is rendered obligatory. These things work, if not for perfection, at least for the evolution of a sane and wholesome *waterborne* cruiser. The type of rudder is unaffected by the new rules, so we may expect to see the Long-Davidson make (the patent on which has just expired) come largely into use henceforward, though the strain on the sternpost in turning at speeds over forty miles an hour is admittedly very severe. But bat-boat racing has a great future before it.

CORRESPONDENCE

Correspondence

Skylarking on the Equator

To the Editor — Only last week, while crossing the Equator (W. 26.15), I became aware of a furious and irregular cannonading some fifteen or twenty knots S. 4 E. Descending to the 500 ft. level, I found a party of Transylvanian tourists engaged in exploding scores of the largest pattern atmospheric bombs (A. B. C. standard) and, in the intervals of their pleasing labours, firing bow and stern smoke-ring swivels. This orgie — I can give it no other name—went on for at least two hours, and naturally produced violent electric derangements. My compasses, of course, were thrown out, my bow was struck twice, and I received two brisk shocks from the lower platform-rail. On remonstrating, I was told that these "professors" were engaged in scientific experiments. The extent of their "scientific" knowledge may be judged by the fact that they expected to produce (I give their own words) "a little blue sky" if "they went on long enough." This in the heart of the Doldrums at 450 feet! I have no objection to any amount of blue sky in its proper place (it can be found at the 2,000 level for practically twelve months out of the year), but I submit, with all deference to the educational needs of Transylvania, that "sky-larking" in the centre of a main-travelled road where, at the best of times, electricity literally drips off one's stanchions and screw blades, is unnecessary. When my friends had finished, the road was seared, and blown, and pitted with unequal pressure-layers, spirals,

vortices, and readjustments for at least an hour. I pitched badly twice in an upward rush — solely due to these diabolical throw-downs — that came near to wrecking my propeller. Equatorial work at low levels is trying enough in all conscience without the added terrors of scientific hooliganism in the Doldrums.

Rhyl. J. Vincent Mathews.

[We entirely sympathize with Professor Mathews's views, but unluckily till the Board sees fit to further regulate the Southern areas in which scientific experiments may be conducted, we shall always be exposed to the risk which our correspondent describes. Unfortunately, a chimera bombinating in a vacuum is, nowadays, only too capable of producing secondary causes. — *Editor.*]

Answers to Correspondents

Vigilans — The Laws of Auroral Derangements are still imperfectly understood. Any overheated motor may of course "seize" without warning; but so many complaints have reached us of accidents similar to yours while shooting the Aurora that we are inclined to believe with Lavalle that the upper strata of the Aurora Borealis are practically one big electric "leak," and that the paralysis of your engines was due to complete magnetization of all metallic parts. Low-flying planes often "glue up" when near the Magnetic Pole, and there is no reason in science why the same disability should not be experienced at higher levels when the Auroras are "delivering" strongly.

Indignant — On your own showing, you were not under control. That you could not hoist the necessary N. U. C. lights on approaching a traffic-lane because your electrics had short-circuited is a misfortune which might befall any one. The A. B. C., being responsible for the

planet's traffic, cannot, however, make allowance for this kind of misfortune. A reference to the Code will show that you were fined on the lower scale.

PLANISTON — (1) The Five Thousand Kilometre (overland) was won last year by L. V. Rautsch, R. M. Rautsch, his brother, in the same week pulling off the Ten Thousand (oversea). R. M.'s average worked out at a fraction over 500 kilometres per hour, thus constituting a record. (2) Theoretically, there is no limit to the lift of a dirigible. For commercial and practical purposes 15,000 tons is accepted as the most manageable.

PATERFAMILIAS — None whatever. He is liable for direct damage both to your chimneys and any collateral damage caused by fall of bricks into garden, etc., etc. Bodily inconvenience and mental anguish may be included, but the average jury are not, as a rule, men of sentiment. If you can prove that his grapnel removed *any* portion of your roof, you had better rest your case on decoverture of domicile (See Parkins *v.* Duboulay). We entirely sympathize with your position, but the night of the 14th was stormy and confused, and — you may have to anchor on a stranger's chimney yourself some night. *Verbum sap!*

ALDEBARAN — War, as a paying concern, ceased in 1967. (2) The Convention of London expressly reserves to every nation the right of waging war so long as it does not interfere with the world's traffic. (3) The A. B. C. was constituted in 1949.

L. M. D.— Keep her dead head-on at half-power, taking advantage of the lulls to speed up and creep into it. She will strain much less this way than in quartering across a gale. (2) Nothing is to be gained by reversing into a following gale, and there is always risk of a turn-over. (3) The formulæ for stun'sle brakes are uniformly unreliable, and will continue to be so as long as air is compressible.

PEGAMOID — Personally we prefer glass or flux compounds to any other material for winter work nose-caps as being absolutely non-hygroscopic. (2) We cannot recommend any particular make.

PULMONAR — For the symptoms you describe, try the Gobi Desert Sanitaria. The low levels of the Saharan Sanitaria are against them except at the outset of the disease. (2) We do not recommend boarding-houses or hotels in this column.

BEGINNER — On still days the air above a large inhabited city being slightly warmer—i. e., thinner—than the atmosphere of the surrounding country, a plane drops a little on entering the rarefied area, precisely as a ship sinks a little in fresh water. Hence the phenomena of "jolt" and your "inexplicable collisions" with factory chimneys. In air, as on earth, it is safest to fly high.

EMERGENCY — There is only one rule of the road in air, earth,and water. Do you want the firmament to yourself?

PICCIOLA — Both Poles have been overdone in Art and Literature. Leave them to Science for the next twenty years. You did not send a stamp with your verses.

NORTH NIGERIA —The Mark Boat was within her right in warning you up on the Reserve. The shadow of a low-flying dirigible scares the game. You can buy all the photos you need at Sokoto.

NEW ERA — It is not etiquette to overcross an A. B. C. official's boat without asking permission. He is one of the body responsible for the planet's traffic, and for that reason must not be interfered with. You, presumably, are out on your own business or pleasure, and should leave him alone. For humanity's sake don't try to be "democratic."

REVIEWS

Reviews

The Life of Xavier Lavalle

(*Reviewed by Réné Talland. École Aëronautique, Paris*)

Ten years ago Lavalle, "that imperturbable dreamer of the heavens," as Lazareff hailed him, gathered together the fruits of a lifetime's labour, and gave it, with well-justified contempt, to a world bound hand and foot to Barald's Theory of Vertices and "compensating electric nodes." "They shall see," he wrote — in that immortal postscript to "The Heart of the Cyclone" — "the Laws whose existence they derided written in fire *beneath* them."

"But even here," he continues, "there is no finality. Better a thousand times my conclusions should be discredited than that my dead name should lie across the threshold of the temple of Science — a bar to further inquiry."

So died Lavalle — a prince of the Powers of the Air, and even at his funeral Céllier jested at "him who had gone to discover the secrets of the Aurora Borealis."

If I choose thus to be banal, it is only to remind you that Céllier's theories are to-day as exploded as the ludicrous deductions of the Spanish school. In the place of their fugitive and warring dreams we have, definitely, Lavalle's Law of the Cyclone which he surprised in darkness and cold at the foot of the overarching throne of the Aurora Borealis. It is there that I, intent on my own investigations, have passed and re-passed a hundred times the worn leonine face, white as the snow beneath him, furrowed

with wrinkles like the seams and gashes upon the North Cape; the nervous hand, integrally a part of the mechanism of his flighter; and above all, the wonderful lambent eyes turned to the zenith.

"Master," I would cry as I moved respectfully beneath him, "what is it you seek to-day?" and always the answer, clear and without doubt, from above: "The old secret, my son!"

The immense egotism of youth forced me on my own path, but (cry of the human always!) had I known — if I had known — I would many times have bartered my poor laurels for the privilege, such as Tinsley and Herrera possess, of having aided him in his monumental researches.

It is to the filial piety of Victor Lavalle that we owe the two volumes consecrated to the ground-life of his father, so full of the holy intimacies of the domestic hearth. Once returned from the abysms of the utter North to that little house upon the outskirts of Meudon, it was not the philosopher, the daring observer, the man of iron energy that imposed himself on his family, but a fat and even plaintive jester, a farceur incarnate and kindly, the co-equal of his children, and, it must be written, not seldom the comic despair of Madame Lavalle, who, as she writes five years after the marriage, to her venerable mother, found "in this unequalled intellect whose name I bear the abandon of a large and very untidy boy." Here is her letter:

"Xavier returned from I do not know where at midnight, absorbed in calculations on the eternal question of his Aurora — *la belle Aurore*, whom I begin to hate. Instead of anchoring — I had set out the guide-light above our roof, so he had but to descend and fasten the plane — he wandered, profoundly distracted, above the town with

his anchor down! Figure to yourself, dear mother, it is the roof of the mayor's house that the grapnel first engages! That I do not regret, for the mayor's wife and I are not sympathetic; but when Xavier uproots my pet araucaria and bears it across the garden into the conservatory I protest at the top of my voice. Little Victor in his night-clothes runs to the window, enormously amused at the parabolic flight without reason, for it is too dark to see the grapnel, of my prized tree. The Mayor of Meudon thunders at our door in the name of the Law, demanding, I suppose, my husband's head. Here is the conversation through the megaphone — Xavier is two hundred feet above us.

"'Mons. Lavalle, descend and make reparation for outrage of domicile. Descend, Mons. Lavalle!'

"No one answers.

"'Xavier Lavalle, in the name of the Law, descend and submit to process for outrage of domicile.'

"Xavier, roused from his calculations, only comprehending the last words: 'Outrage of domicile? My dear mayor, who is the man that has corrupted thy Julie?'

"The mayor, furious, 'Xavier Lavalle ——'

"Xavier, interrupting: 'I have not that felicity. I am only a dealer in cyclones!'

"My faith, he raised one then! All Meudon attended in the streets, and my Xavier, after a long time comprehending what he had done, excused himself in a thousand apologies. At last the reconciliation was effected in our house over a supper at two in the morning — Julie in a wonderful costume of compromises, and I have her and the mayor pacified in beds in the blue room."

And on the next day, while the mayor rebuilds his roof, her Xavier departs anew for the Aurora Borealis, there

to commence his life's work. M. Victor Lavalle tells us of that historic collision (*en plane*) on the flank of Hecla between Herrera, then a pillar of the Spanish school, and the man destined to confute his theories and lead him intellectually captive. Even through the years, the immense laugh of Lavalle as he sustains the Spaniard's wrecked plane, and cries: "Courage! *I* shall not fall till I have found Truth, and I hold *you* fast!" rings like the call of trumpets. This is that Lavalle whom the world, immersed in speculations of immediate gain, did not know nor suspect — the Lavalle whom they adjudged to the last a pedant and a theorist.

The human, as apart from the scientific, side (developed in his own volumes) of his epoch-making discoveries is marked with a simplicity, clarity, and good sense beyond praise. I would specially refer such as doubt the sustaining influence of ancestral faith upon character and will to the eleventh and nineteenth chapters, in which are contained the opening and consummation of the Tellurionical Records extending over nine years. Of their tremendous significance be sure that the modest house at Meudon knew as little as that the Records would one day be the world's standard in all official meteorology. It was enough for them that their Xavier — this son, this father, this husband — ascended periodically to commune with powers, it might be angelic, beyond their comprehension, and that they united daily in prayers for his safety.

"Pray for me," he says upon the eve of each of his excursions, and returning, with an equal simplicity, he renders thanks "after supper in the little room where he kept his barometers."

To the last Lavalle was a Catholic of the old school, accepting — he who had looked into the very heart of the lightnings — the dogmas of papal infallibility, of absolu-

tion, of confession — of relics great and small. Marvellous — enviable contradiction!

The completion of the Tellurionical Records closed what Lavalle himself was pleased to call the theoretical side of his labours — labours from which the youngest and least impressionable planeur might well have shrunk. He had traced through cold and heat, across the deeps of the oceans, with instruments of his own invention, over the inhospitable heart of the polar ice and the sterile visage of the deserts, league by league, patiently, unweariedly, remorselessly, from their ever-shifting cradle under the magnetic pole to their exalted death-bed in the utmost ether of the upper atmosphere — each one of the Isoconical Tellurions — Lavalle's Curves, as we call them to-day. He had disentangled the nodes of their intersections, assigning to each its regulated period of flux and reflux. Thus equipped, he summons Herrera and Tinsley, his pupils, to the final démonstration as calmly as though he were ordering his flighter for some midday journey to Marseilles.

"I have proved my thesis," he writes. "It remains now only that you should witness the proof. We go to Manila to-morrow. A cyclone will form off the Pescadores S. 17 E. in four days, and will reach its maximum intensity in twenty-seven hours after inception. It is there I will show you the Truth."

A letter heretofore unpublished from Herrera to Madame Lavalle tells us how the Master's prophecy was verified.

(To be continued.)

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